



## SEQUENCE LISTING

<110> Heartlein, Michael W.  
Lemontt, Jeffrey F.  
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B  
<120> CHIMERIC PROTEINS FOR USE IN TRANSPORT  
OF A SELECTED SUBSTANCE INTO CELLS

<130> 10278-025004

<140> US 09/753,385

<141> 2001-01-03

<150> US 08/470,058

<151> 1995-06-06

<150> US 09/037,188

<151> 1998-03-09

<150> US 09/285,310

<151> 1999-04-02

<160> 12

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Ala	Leu	Leu	Leu	Ala	Ala	Ala	Gly	Thr	Ala	Val	Gly	Asp	Arg	Cys	Glu	
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aga	aac	gag	ttc	cag	tgc	caa	gac	ggg	aaa	tgc	atc	tcc	tac	aag	tgg	145
Arg	Asn	Glu	Phe	Gln	Cys	Gln	Asp	Gly	Lys	Cys	Ile	Ser	Tyr	Lys	Trp	
	30					35					40					

gtc	tgc	gat	ggc	agc	gct	gag	tgc	cag	gat	ggc	tct	gat	gag	tcc	cag	193
Val	Cys	Asp	Gly	Ser	Ala	Glu	Cys	Gln	Asp	Gly	Ser	Asp	Glu	Ser	Gln	
	45					50				55					60	

gag	acg	tgc	ttg	tct	gtc	acc	tgc	aaa	tcc	ggg	gac	ttc	agc	tgt	ggg	241
Glu	Thr	Cys	Leu	Ser	Val	Thr	Cys	Lys	Ser	Gly	Asp	Phe	Ser	Cys	Gly	

	65	70	75	
	ggc cgt gtc aac cgc tgc att cct cag ttc tgg agg tgc gat ggc caa			289
	Gly Arg Val Asn Arg Cys Ile Pro Gln Phe Trp Arg Cys Asp Gly Gln			
	80	85	90	
	gtg gac tgc gac aac ggc tca gac gag caa ggc tgt ccc ccc aag acg			337
	Val Asp Cys Asp Asn Gly Ser Asp Glu Gln Gly Cys Pro Pro Lys Thr			
	95	100	105	
	tgc tcc cag gac gag ttt cgc tgc cac gat ggg aag tgc atc tct cgg			385
	Cys Ser Gln Asp Glu Phe Arg Cys His Asp Gly Lys Cys Ile Ser Arg			
	110	115	120	
	cag ttc gtc tgt gac tca gac cgg gac tgc ttg gac ggc tca gac gag			433
	Gln Phe Val Cys Asp Ser Asp Arg Asp Cys Leu Asp Gly Ser Asp Glu			
	125	130	135	140
	gcc tcc tgc ccg gtg ctc acc tgt ggt ccc gcc agc ttc cag tgc aac			481
	Ala Ser Cys Pro Val Leu Thr Cys Gly Pro Ala Ser Phe Gln Cys Asn			
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	agc tcc acc tgc atc ccc cag ctg tgg gcc tgc gac aac gac ccc gac			529
	Ser Ser Thr Cys Ile Pro Gln Leu Trp Ala Cys Asp Asn Asp Pro Asp			
	160	165	170	
	tgc gaa gat ggc tcg gat gag tgg ccg cag cgc tgt agg ggt ctt tac			577
	Cys Glu Asp Gly Ser Asp Glu Trp Pro Gln Arg Cys Arg Gly Leu Tyr			
	175	180	185	
	gtg ttc caa ggg gac agt agc ccc tgc tcg gcc ttc gag ttc cac tgc			625
	Val Phe Gln Gly Asp Ser Ser Pro Cys Ser Ala Phe Glu Phe His Cys			
	190	195	200	
	cta agt ggc gag tgc atc cac tcc agc tgg cgc tgt gat ggt ggc ccc			673
	Leu Ser Gly Glu Cys Ile His Ser Ser Trp Arg Cys Asp Gly Gly Pro			
	205	210	215	220
	gac tgc aag gac aaa tct gac gag gaa aac tgc gct gtg gcc acc tgt			721
	Asp Cys Lys Asp Lys Ser Asp Glu Glu Asn Cys Ala Val Ala Thr Cys			
	225	230	235	
	cgc cct gac gaa ttc cag tgc tct gat gga aac tgc atc cat ggc agc			769
	Arg Pro Asp Glu Phe Gln Cys Ser Asp Gly Asn Cys Ile His Gly Ser			
	240	245	250	
	cgg cag tgt gac cgg gaa tat gac tgc aag gac atg agc gat gaa gtt			817
	Arg Gln Cys Asp Arg Glu Tyr Asp Cys Lys Asp Met Ser Asp Glu Val			
	255	260	265	
	ggc tgc gtt aat gtg aca ctc tgc gag gga ccc aac aag ttc aag tgt			865
	Gly Cys Val Asn Val Thr Leu Cys Glu Gly Pro Asn Lys Phe Lys Cys			
	270	275	280	
	cac agc ggc gaa tgc atc acc ctg gac aaa gtc tgc aac atg gct aga			913
	His Ser Gly Glu Cys Ile Thr Leu Asp Lys Val Cys Asn Met Ala Arg			
	285	290	295	300

B  
cont.

gac tgc cgg gac tgg tca gat gaa ccc atc aaa gag tgc ggg acc aac 961  
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gaa tgc ttg gac aac aac ggc ggc tgt tcc cac gtc tgc aat gac ctt 1009  
 Glu Cys Leu Asp Asn Asn Gly Gly Cys Ser His Val Cys Asn Asp Leu  
 320 325 330

aag atc ggc tac gag tgc ctg tgc ccc gac ggc ttc cag ctg gtg gcc 1057  
 Lys Ile Gly Tyr Glu Cys Leu Cys Pro Asp Gly Phe Gln Leu Val Ala  
 335 340 345

cag cga aga tgc gaa gat atc gat gag tgt cag gat ccc gac acc tgc 1105  
 Gln Arg Arg Cys Glu Asp Ile Asp Glu Cys Gln Asp Pro Asp Thr Cys  
 350 355 360

agc cag ctc tgc gtg aac ctg gag ggt ggc tac aag tgc cag tgt gag 1153  
 Ser Gln Leu Cys Val Asn Leu Glu Gly Gly Tyr Lys Cys Gln Cys Glu  
 365 370 375 380

gaa ggc ttc cag ctg gac ccc cac acg aag gcc tgc aag gct gtg gtc 1201  
 Glu Gly Phe Gln Leu Asp Pro His Thr Lys Ala Cys Lys Ala Val Val  
 385 390 395

cct gat aaa act gtg aga tgg tgt gca gtg tcg gag cat gag gcc act 1249  
 Pro Asp Lys Thr Val Arg Trp Cys Ala Val Ser Glu His Glu Ala Thr  
 400 405 410

aag tgc cag agt ttc cgc gac cat atg aaa agc gtc att cca tcc gat 1297  
 Lys Cys Gln Ser Phe Arg Asp His Met Lys Ser Val Ile Pro Ser Asp  
 415 420 425

ggt ccc agt gtt gct tgt gtg aag aaa gcc tcc tac ctt gat tgc atc 1345  
 Gly Pro Ser Val Ala Cys Val Lys Lys Ala Ser Tyr Leu Asp Cys Ile  
 430 435 440

agg gcc att gcg gca aac gaa gcg gat gct gtg aca ctg gat gca ggt 1393  
 Arg Ala Ile Ala Ala Asn Glu Ala Asp Ala Val Thr Leu Asp Ala Gly  
 445 450 455 460

ttg gtg tat gat gct tac ttg gct ccc aat aac ctg aag cct gtg gtg 1441  
 Leu Val Tyr Asp Ala Tyr Leu Ala Pro Asn Asn Leu Lys Pro Val Val  
 465 470 475

gca gag ttc tat ggg tca aaa gag gat cca cag act ttc tat tat gct 1489  
 Ala Glu Phe Tyr Gly Ser Lys Glu Asp Pro Gln Thr Phe Tyr Tyr Ala  
 480 485 490

gtt gct gtg gtg aag aag gat agt ggc ttc cag atg aac cag ctt cga 1537  
 Val Ala Val Val Lys Lys Asp Ser Gly Phe Gln Met Asn Gln Leu Arg  
 495 500 505

ggc aag aag tcc tgc cac acg ggt cta ggc agg tcc gct ggg tgg aac 1585  
 Gly Lys Lys Ser Cys His Thr Gly Leu Gly Arg Ser Ala Gly Trp Asn  
 510 515 520

B  
cont

atc ccc ata ggc tta ctt tac tgt gac tta cct gag cca cgt aaa cct 1633  
 Ile Pro Ile Gly Leu Leu Tyr Cys Asp Leu Pro Glu Pro Arg Lys Pro  
 525 530 535 540

ctt gag aaa gca gtg gcc aat ttc ttc tcg ggc agc tgt gcc cct tgt 1681  
 Leu Glu Lys Ala Val Ala Asn Phe Phe Ser Gly Ser Cys Ala Pro Cys  
 545 550 555

gcg gat ggg acg gac ttc ccc cag ctg tgt caa ctg tgt cca ggg tgt 1729  
 Ala Asp Gly Thr Asp Phe Pro Gln Leu Cys Gln Leu Cys Pro Gly Cys  
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ggc tgc tcc acc ctt aac caa tac ttc ggc tac tcg gga gcc ttc aag 1777  
 Gly Cys Ser Thr Leu Asn Gln Tyr Phe Gly Tyr Ser Gly Ala Phe Lys  
 575 580 585

tgt ctg aag gat ggt gct ggg gat gtg gcc ttt gtc aag cac tcg act 1825  
 Cys Leu Lys Asp Gly Ala Gly Asp Val Ala Phe Val Lys His Ser Thr  
 590 595 600

ata ttt gag aac ttg gca aac aag gct gac agg gac cag tat gag ctg 1873  
 Ile Phe Glu Asn Leu Ala Asn Lys Ala Asp Arg Asp Gln Tyr Glu Leu  
 605 610 615 620

ctt tgc cta gac aac acc cgg aag ccg gta gat gaa tac aag gac tgc 1921  
 Leu Cys Leu Asp Asn Thr Arg Lys Pro Val Asp Glu Tyr Lys Asp Cys  
 625 630 635

cac ttg gcc cag gtc cct tct cat acc gtc gtg gcc cga agt atg ggc 1969  
 His Leu Ala Gln Val Pro Ser His Thr Val Val Ala Arg Ser Met Gly  
 640 645 650

ggc aag gag gac ttg atc tgg gag ctt ctc aac cag gcc cag gaa cat 2017  
 Gly Lys Glu Asp Leu Ile Trp Glu Leu Leu Asn Gln Ala Gln Glu His  
 655 660 665

ttt ggc aaa gac aaa tca aaa gaa ttc caa cta ttc agc tct cct cat 2065  
 Phe Gly Lys Asp Lys Ser Lys Glu Phe Gln Leu Phe Ser Ser Pro His  
 670 675 680

ggg aag gac ctg ctg ttt aag gac tct gcc cac ggg ttt tta aaa gtc 2113  
 Gly Lys Asp Leu Leu Phe Lys Asp Ser Ala His Gly Phe Leu Lys Val  
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ccc cca agg atg gat gcc aag atg tac ctg ggc tat gag tat gtc act 2161  
 Pro Pro Arg Met Asp Ala Lys Met Tyr Leu Gly Tyr Glu Tyr Val Thr  
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gcc atc cgg aat cta cgg gaa ggc aca tgc cca gaa gcc cca aca gat 2209  
 Ala Ile Arg Asn Leu Arg Glu Gly Thr Cys Pro Glu Ala Pro Thr Asp  
 720 725 730

gaa tgc aag cct gtg aag tgg tgt gcg ctg agc cac cac gag agg ctc 2257  
 Glu Cys Lys Pro Val Lys Trp Cys Ala Leu Ser His His Glu Arg Leu  
 735 740 745

aag tgt gat gag tgg agt gtt aac agt gta ggg aaa ata gag tgt gta 2305

B  
cont.

Lys	Cys	Asp	Glu	Trp	Ser	Val	Asn	Ser	Val	Gly	Lys	Ile	Glu	Cys	Val		
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Ser	Ala	Glu	Thr	Thr	Glu	Asp	Cys	Ile	Ala	Lys	Ile	Met	Asn	Gly	Glu		
765					770				775					780			
gct	gat	gcc	atg	agc	ttg	gat	gga	ggg	ttt	gtc	tac	ata	gcg	ggc	aag	2401	
Ala	Asp	Ala	Met	Ser	Leu	Asp	Gly	Gly	Phe	Val	Tyr	Ile	Ala	Gly	Lys		
				785					790					795			
tgt	ggc	ctg	gtg	cct	gtc	ttg	gca	gaa	aac	tac	aat	aag	agc	gat	aat	2449	
Cys	Gly	Leu	Val	Pro	Val	Leu	Ala	Glu	Asn	Tyr	Asn	Lys	Ser	Asp	Asn		
			800					805					810				
tgt	gag	gat	aca	cca	gag	gca	ggg	tat	ttt	gct	gta	gca	gtg	gtg	aag	2497	
Cys	Glu	Asp	Thr	Pro	Glu	Ala	Gly	Tyr	Phe	Ala	Val	Ala	Val	Val	Lys		
			815				820					825					
aaa	tca	gct	tct	gac	ctc	acc	tgg	gac	aat	ctg	aaa	ggc	aag	aag	tcc	2545	
Lys	Ser	Ala	Ser	Asp	Leu	Thr	Trp	Asp	Asn	Leu	Lys	Gly	Lys	Lys	Ser		
	830					835					840						
tgc	cat	acg	gca	gtt	ggc	aga	acc	gct	ggc	tgg	aac	atc	ccc	atg	ggc	2593	
Cys	His	Thr	Ala	Val	Gly	Arg	Thr	Ala	Gly	Trp	Asn	Ile	Pro	Met	Gly		
845					850				855					860			
ctg	ctc	tac	aat	aag	atc	aac	cac	tgc	aga	ttt	gat	gaa	ttt	ttc	agt	2641	
Leu	Leu	Tyr	Asn	Lys	Ile	Asn	His	Cys	Arg	Phe	Asp	Glu	Phe	Phe	Ser		
			865					870						875			
gaa	ggc	tgt	gcc	cct	ggg	tct	aag	aaa	gac	tcc	agt	ctc	tgt	aag	ctg	2689	
Glu	Gly	Cys	Ala	Pro	Gly	Ser	Lys	Lys	Asp	Ser	Ser	Leu	Cys	Lys	Leu		
			880					885					890				
tgt	atg	ggc	tca	ggc	cta	aac	ctg	tgt	gaa	ccc	aac	aac	aaa	gag	gga	2737	
Cys	Met	Gly	Ser	Gly	Leu	Asn	Leu	Cys	Glu	Pro	Asn	Asn	Lys	Glu	Gly		
		895				900						905					
tac	tac	ggc	tac	aca	ggc	gct	ttc	agg	tgt	ctg	gtt	gag	aag	gga	gat	2785	
Tyr	Tyr	Gly	Tyr	Thr	Gly	Ala	Phe	Arg	Cys	Leu	Val	Glu	Lys	Gly	Asp		
		910				915					920						
gtg	gcc	ttt	gtg	aaa	cac	cag	act	gtc	cca	cag	aac	act	ggg	gga	aaa	2833	
Val	Ala	Phe	Val	Lys	His	Gln	Thr	Val	Pro	Gln	Asn	Thr	Gly	Gly	Lys		
925				930					935					940			
aac	cct	gat	cca	tgg	gct	aag	aat	ctg	aat	gaa	aaa	gac	tat	gag	ttg	2881	
Asn	Pro	Asp	Pro	Trp	Ala	Lys	Asn	Leu	Asn	Glu	Lys	Asp	Tyr	Glu	Leu		
				945				950						955			
ctg	tgc	ctt	gat	ggc	acc	agg	aaa	cct	gtg	gag	gag	tat	gcg	aac	tgc	2929	
Leu	Cys	Leu	Asp	Gly	Thr	Arg	Lys	Pro	Val	Glu	Glu	Tyr	Ala	Asn	Cys		
			960				965						970				
cac	ctg	gcc	aga	gcc	ccg	aat	cac	gct	gtg	gtc	aca	cgg	aaa	gat	aag	2977	
His	Leu	Ala	Arg	Ala	Pro	Asn	His	Ala	Val	Val	Thr	Arg	Lys	Asp	Lys		

B  
Cont.

975	980	985	
gaa gct tgc gtc cac aag ata tta cgt caa cag cag cac cta ttt gga			3025
Glu Ala Cys Val His Lys Ile Leu Arg Gln Gln Gln His Leu Phe Gly			
990	995	1000	
agc aac gta act gac tgc tcg ggc aac ttt tgt ttg ttc cgg tcg gaa			3073
Ser Asn Val Thr Asp Cys Ser Gly Asn Phe Cys Leu Phe Arg Ser Glu			
1005	1010	1015	1020
acc aag gac ctt ctg ttc aga gat gac aca gta tgt ttg gcc aaa ctt			3121
Thr Lys Asp Leu Leu Phe Arg Asp Asp Thr Val Cys Leu Ala Lys Leu			
	1025	1030	1035
cat gac aga aac aca tat gaa aaa tac tta gga gaa gaa tat gtc aag			3169
His Asp Arg Asn Thr Tyr Glu Lys Tyr Leu Gly Glu Glu Tyr Val Lys			
	1040	1045	1050
gct gtt ggt aac ctg aga aaa tgc tcc acc tca tca ctc ctg gaa gcc			3217
Ala Val Gly Asn Leu Arg Lys Cys Ser Thr Ser Ser Leu Leu Glu Ala			
	1055	1060	1065
tgc act ttc cgt aga cct taaaatctca gaggtagggc tgccaccaag			3265
Cys Thr Phe Arg Arg Pro			
1070			
gtgaagatgg gaacgcagat gatccatgag tttgccctgg tttcactggc ccaagtgggt			3325
tgtgctaacc acgtctgtct tcacagctct gtgttgccat gtgtgctgaa caaaaaataa			3385
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Gln Cys Gln Asp Gly Lys Cys Ile Ser Tyr Lys Trp Val Cys Asp Gly			
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Ser Ala Glu Cys Gln Asp Gly Ser Asp Glu Ser Gln Glu Thr Cys Leu			
	50	55	60
Ser Val Thr Cys Lys Ser Gly Asp Phe Ser Cys Gly Gly Arg Val Asn			
	65	70	75
Arg Cys Ile Pro Gln Phe Trp Arg Cys Asp Gly Gln Val Asp Cys Asp			
	85	90	95
Asn Gly Ser Asp Glu Gln Gly Cys Pro Pro Lys Thr Cys Ser Gln Asp			
	100	105	110
Glu Phe Arg Cys His Asp Gly Lys Cys Ile Ser Arg Gln Phe Val Cys			
	115	120	125
Asp Ser Asp Arg Asp Cys Leu Asp Gly Ser Asp Glu Ala Ser Cys Pro			
	130	135	140
Val Leu Thr Cys Gly Pro Ala Ser Phe Gln Cys Asn Ser Ser Thr Cys			
	145	150	155
Ile Pro Gln Leu Trp Ala Cys Asp Asn Asp Pro Asp Cys Glu Asp Gly			160

				165					170					175		
Ser	Asp	Glu	Trp	Pro	Gln	Arg	Cys	Arg	Gly	Leu	Tyr	Val	Phe	Gln	Gly	
			180						185				190			
Asp	Ser	Ser	Pro	Cys	Ser	Ala	Phe	Glu	Phe	His	Cys	Leu	Ser	Gly	Glu	
		195					200					205				
Cys	Ile	His	Ser	Ser	Trp	Arg	Cys	Asp	Gly	Gly	Pro	Asp	Cys	Lys	Asp	
	210					215					220					
Lys	Ser	Asp	Glu	Glu	Asn	Cys	Ala	Val	Ala	Thr	Cys	Arg	Pro	Asp	Glu	
225					230					235					240	
Phe	Gln	Cys	Ser	Asp	Gly	Asn	Cys	Ile	His	Gly	Ser	Arg	Gln	Cys	Asp	
				245					250					255		
Arg	Glu	Tyr	Asp	Cys	Lys	Asp	Met	Ser	Asp	Glu	Val	Gly	Cys	Val	Asn	
			260					265					270			
Val	Thr	Leu	Cys	Glu	Gly	Pro	Asn	Lys	Phe	Lys	Cys	His	Ser	Gly	Glu	
		275					280					285				
Cys	Ile	Thr	Leu	Asp	Lys	Val	Cys	Asn	Met	Ala	Arg	Asp	Cys	Arg	Asp	
	290					295					300					
Trp	Ser	Asp	Glu	Pro	Ile	Lys	Glu	Cys	Gly	Thr	Asn	Glu	Cys	Leu	Asp	
305					310					315					320	
Asn	Asn	Gly	Gly	Cys	Ser	His	Val	Cys	Asn	Asp	Leu	Lys	Ile	Gly	Tyr	
				325					330					335		
Glu	Cys	Leu	Cys	Pro	Asp	Gly	Phe	Gln	Leu	Val	Ala	Gln	Arg	Arg	Cys	
			340				345						350			
Glu	Asp	Ile	Asp	Glu	Cys	Gln	Asp	Pro	Asp	Thr	Cys	Ser	Gln	Leu	Cys	
		355					360					365				
Val	Asn	Leu	Glu	Gly	Gly	Tyr	Lys	Cys	Gln	Cys	Glu	Glu	Gly	Phe	Gln	
	370					375					380					
Leu	Asp	Pro	His	Thr	Lys	Ala	Cys	Lys	Ala	Val	Val	Pro	Asp	Lys	Thr	
385					390					395					400	
Val	Arg	Trp	Cys	Ala	Val	Ser	Glu	His	Glu	Ala	Thr	Lys	Cys	Gln	Ser	
			405						410					415		
Phe	Arg	Asp	His	Met	Lys	Ser	Val	Ile	Pro	Ser	Asp	Gly	Pro	Ser	Val	
			420					425					430			
Ala	Cys	Val	Lys	Lys	Ala	Ser	Tyr	Leu	Asp	Cys	Ile	Arg	Ala	Ile	Ala	
		435					440					445				
Ala	Asn	Glu	Ala	Asp	Ala	Val	Thr	Leu	Asp	Ala	Gly	Leu	Val	Tyr	Asp	
		450			455						460					
Ala	Tyr	Leu	Ala	Pro	Asn	Asn	Leu	Lys	Pro	Val	Val	Ala	Glu	Phe	Tyr	
465					470					475					480	
Gly	Ser	Lys	Glu	Asp	Pro	Gln	Thr	Phe	Tyr	Tyr	Ala	Val	Ala	Val	Val	
				485					490					495		
Lys	Lys	Asp	Ser	Gly	Phe	Gln	Met	Asn	Gln	Leu	Arg	Gly	Lys	Lys	Ser	
			500					505					510			
Cys	His	Thr	Gly	Leu	Gly	Arg	Ser	Ala	Gly	Trp	Asn	Ile	Pro	Ile	Gly	
		515					520									

Asn	Thr	Arg	Lys	Pro	Val	Asp	Glu	Tyr	Lys	Asp	Cys	His	Leu	Ala	Gln	625	630	635	640
Val	Pro	Ser	His	Thr	Val	Val	Ala	Arg	Ser	Met	Gly	Gly	Lys	Glu	Asp	645	650	655	
Leu	Ile	Trp	Glu	Leu	Leu	Asn	Gln	Ala	Gln	Glu	His	Phe	Gly	Lys	Asp	660	665	670	
Lys	Ser	Lys	Glu	Phe	Gln	Leu	Phe	Ser	Ser	Pro	His	Gly	Lys	Asp	Leu	675	680	685	
Leu	Phe	Lys	Asp	Ser	Ala	His	Gly	Phe	Leu	Lys	Val	Pro	Pro	Arg	Met	690	695	700	
Asp	Ala	Lys	Met	Tyr	Leu	Gly	Tyr	Glu	Tyr	Val	Thr	Ala	Ile	Arg	Asn	705	710	715	720
Leu	Arg	Glu	Gly	Thr	Cys	Pro	Glu	Ala	Pro	Thr	Asp	Glu	Cys	Lys	Pro	725	730	735	
Val	Lys	Trp	Cys	Ala	Leu	Ser	His	His	Glu	Arg	Leu	Lys	Cys	Asp	Glu	740	745	750	
Trp	Ser	Val	Asn	Ser	Val	Gly	Lys	Ile	Glu	Cys	Val	Ser	Ala	Glu	Thr	755	760	765	
Thr	Glu	Asp	Cys	Ile	Ala	Lys	Ile	Met	Asn	Gly	Glu	Ala	Asp	Ala	Met	770	775	780	
Ser	Leu	Asp	Gly	Gly	Phe	Val	Tyr	Ile	Ala	Gly	Lys	Cys	Gly	Leu	Val	785	790	795	800
Pro	Val	Leu	Ala	Glu	Asn	Tyr	Asn	Lys	Ser	Asp	Asn	Cys	Glu	Asp	Thr	805	810	815	
Pro	Glu	Ala	Gly	Tyr	Phe	Ala	Val	Ala	Val	Val	Lys	Lys	Ser	Ala	Ser	820	825	830	
Asp	Leu	Thr	Trp	Asp	Asn	Leu	Lys	Gly	Lys	Lys	Ser	Cys	His	Thr	Ala	835	840	845	
Val	Gly	Arg	Thr	Ala	Gly	Trp	Asn	Ile	Pro	Met	Gly	Leu	Leu	Tyr	Asn	850	855	860	
Lys	Ile	Asn	His	Cys	Arg	Phe	Asp	Glu	Phe	Phe	Ser	Glu	Gly	Cys	Ala	865	870	875	880
Pro	Gly	Ser	Lys	Lys	Asp	Ser	Ser	Leu	Cys	Lys	Leu	Cys	Met	Gly	Ser	885	890	895	
Gly	Leu	Asn	Leu	Cys	Glu	Pro	Asn	Asn	Lys	Glu	Gly	Tyr	Tyr	Gly	Tyr	900	905	910	
Thr	Gly	Ala	Phe	Arg	Cys	Leu	Val	Glu	Lys	Gly	Asp	Val	Ala	Phe	Val	915	920	925	
Lys	His	Gln	Thr	Val	Pro	Gln	Asn	Thr	Gly	Gly	Lys	Asn	Pro	Asp	Pro	930	935	940	
Trp	Ala	Lys	Asn	Leu	Asn	Glu	Lys	Asp	Tyr	Glu	Leu	Leu	Cys	Leu	Asp	945	950	955	960
Gly	Thr	Arg	Lys	Pro	Val	Glu	Glu	Tyr	Ala	Asn	Cys	His	Leu	Ala	Arg	965	970	975	
Ala	Pro	Asn	His	Ala	Val	Val	Thr	Arg	Lys	Asp	Lys	Glu	Ala	Cys	Val	980	985	990	
His	Lys	Ile	Leu	Arg	Gln	Gln	Gln	His	Leu	Phe	Gly	Ser	Asn	Val	Thr	995	1000	1005	
Asp	Cys	Ser	Gly	Asn	Phe	Cys	Leu	Phe	Arg	Ser	Glu	Thr	Lys	Asp	Leu	1010	1015	1020	
Leu	Phe	Arg	Asp	Asp	Thr	Val	Cys	Leu	Ala	Lys	Leu	His	Asp	Arg	Asn	1025	1030	1035	1040
Thr	Tyr	Glu	Lys	Tyr	Leu	Gly	Glu	Glu	Tyr	Val	Lys	Ala	Val	Gly	Asn	1045	1050	1055	
Leu	Arg	Lys	Cys	Ser	Thr	Ser	Ser	Leu	Leu	Glu	Ala	Cys	Thr	Phe	Arg	1060	1065	1070	
Arg	Pro																		



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gcc ttg ctc ctc gcc gcg gcg ggg act gca gtg ggc gac aga tgt gaa 97  
 Ala Leu Leu Leu Ala Ala Ala Gly Thr Ala Val Gly Asp Arg Cys Glu  
                   15                  20                  25

aga aac gag ttc cag tgc caa gac ggg aaa tgc atc tcc tac aag tgg 145  
 Arg Asn Glu Phe Gln Cys Gln Asp Gly Lys Cys Ile Ser Tyr Lys Trp  
                   30                  35                  40

gtc tgc gat ggc agc gct gag tgc cag gat ggc tct gat gag tcc cag 193  
 Val Cys Asp Gly Ser Ala Glu Cys Gln Asp Gly Ser Asp Glu Ser Gln  
                   45                  50                  55                  60

gag acg tgc ttg tct gtc acc tgc aaa tcc ggg gac ttc agc tgt ggg 241  
 Glu Thr Cys Leu Ser Val Thr Cys Lys Ser Gly Asp Phe Ser Cys Gly  
                   65                  70                  75

ggc cgt gtc aac cgc tgc att cct cag ttc tgg agg tgc gat ggc caa 289  
 Gly Arg Val Asn Arg Cys Ile Pro Gln Phe Trp Arg Cys Asp Gly Gln  
                   80                  85                  90

gtg gac tgc gac aac ggc tca gac gag caa ggc tgt ccc ccc aag acg 337  
 Val Asp Cys Asp Asn Gly Ser Asp Glu Gln Gly Cys Pro Pro Lys Thr  
                   95                  100                  105

tgc tcc cag gac gag ttt cgc tgc cac gat ggg aag tgc atc tct cgg 385  
 Cys Ser Gln Asp Glu Phe Arg Cys His Asp Gly Lys Cys Ile Ser Arg  
                   110                  115                  120

cag ttc gtc tgt gac tca gac cgg gac tgc ttg gac ggc tca gac gag 433  
 Gln Phe Val Cys Asp Ser Asp Arg Asp Cys Leu Asp Gly Ser Asp Glu  
                   125                  130                  135                  140

gcc tcc tgc ccg gtg ctc acc tgt ggt ccc gcc agc ttc cag tgc aac 481  
 Ala Ser Cys Pro Val Leu Thr Cys Gly Pro Ala Ser Phe Gln Cys Asn  
                   145                  150                  155

agc tcc acc tgc atc ccc cag ctg tgg gcc tgc gac aac gac ccc gac 529  
 Ser Ser Thr Cys Ile Pro Gln Leu Trp Ala Cys Asp Asn Asp Pro Asp  
                   160                  165                  170

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Cys	Glu	Asp	Gly	Ser	Asp	Glu	Trp	Pro	Gln	Arg	Cys	Arg	Gly	Leu	Tyr	
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gtg	ttc	caa	ggg	gac	agt	agc	ccc	tgc	tcg	gcc	ttc	gag	ttc	cac	tgc	625
Val	Phe	Gln	Gly	Asp	Ser	Ser	Pro	Cys	Ser	Ala	Phe	Glu	Phe	His	Cys	
	190					195					200					
cta	agt	ggc	gag	tgc	atc	cac	tcc	agc	tgg	cgc	tgt	gat	ggt	ggc	ccc	673
Leu	Ser	Gly	Glu	Cys	Ile	His	Ser	Ser	Trp	Arg	Cys	Asp	Gly	Gly	Pro	
205					210					215					220	
gac	tgc	aag	gac	aaa	tct	gac	gag	gaa	aac	tgc	gct	gtg	gcc	acc	tgt	721
Asp	Cys	Lys	Asp	Lys	Ser	Asp	Glu	Glu	Asn	Cys	Ala	Val	Ala	Thr	Cys	
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cgc	cct	gac	gaa	ttc	cag	tgc	tct	gat	gga	aac	tgc	atc	cat	ggc	agc	769
Arg	Pro	Asp	Glu	Phe	Gln	Cys	Ser	Asp	Gly	Asn	Cys	Ile	His	Gly	Ser	
			240					245					250			
cgg	cag	tgt	gac	cgg	gaa	tat	gac	tgc	aag	gac	atg	agc	gat	gaa	gtt	817
Arg	Gln	Cys	Asp	Arg	Glu	Tyr	Asp	Cys	Lys	Asp	Met	Ser	Asp	Glu	Val	
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ggc	tgc	gtt	aat	gtg	aca	ctc	tgc	gag	gga	ccc	aac	aag	ttc	aag	tgt	865
Gly	Cys	Val	Asn	Val	Thr	Leu	Cys	Glu	Gly	Pro	Asn	Lys	Phe	Lys	Cys	
	270					275					280					
cac	agc	ggc	gaa	tgc	atc	acc	ctg	gac	aaa	gtc	tgc	aac	atg	gct	aga	913
His	Ser	Gly	Glu	Cys	Ile	Thr	Leu	Asp	Lys	Val	Cys	Asn	Met	Ala	Arg	
285					290					295					300	
gac	tgc	cgg	gac	tgg	tca	gat	gaa	ccc	atc	aaa	gag	tgc	ggg	acc	aac	961
Asp	Cys	Arg	Asp	Trp	Ser	Asp	Glu	Pro	Ile	Lys	Glu	Cys	Gly	Thr	Asn	
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gaa	tgc	ttg	gac	aac	aac	ggc	ggc	tgt	tcc	cac	gtc	tgc	aat	gac	ctt	1009
Glu	Cys	Leu	Asp	Asn	Asn	Gly	Gly	Cys	Ser	His	Val	Cys	Asn	Asp	Leu	
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Lys	Ile	Gly	Tyr	Glu	Cys	Leu	Cys	Pro	Asp	Gly	Phe	Gln	Leu	Val	Ala	
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cag	cga	aga	tgc	gaa	gat	atc	gat	gag	tgt	cag	gat	ccc	gac	acc	tgc	1105
Gln	Arg	Arg	Cys	Glu	Asp	Ile	Asp	Glu	Cys	Gln	Asp	Pro	Asp	Thr	Cys	
		350				355					360					
agc	cag	ctc	tgc	gtg	aac	ctg	gag	ggt	ggc	tac	aag	tgc	cag	tgt	gag	1153
Ser	Gln	Leu	Cys	Val	Asn	Leu	Glu	Gly	Gly	Tyr	Lys	Cys	Gln	Cys	Glu	
365					370					375					380	
gaa	ggc	ttc	cag	ctg	gac	ccc	cac	acg	aag	gcc	tgc	aag	gct	gtg	ggc	1201
Glu	Gly	Phe	Gln	Leu	Asp	Pro	His	Thr	Lys	Ala	Cys	Lys	Ala	Val	Gly	
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tcc	atc	gcc	tac	ctc	ttc	ttc	acc	aac	cgg	cac	gag	gtc	agg	aag	atg	1249
Ser	Ile	Ala	Tyr	Leu	Phe	Phe	Thr	Asn	Arg	His	Glu	Val	Arg	Lys	Met	

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acg	ctg	gac	cgg	agc	gag	tac	acc	agc	ctc	atc	ccc	aac	ctg	agg	aac	1297
Thr	Leu	Asp	Arg	Ser	Glu	Tyr	Thr	Ser	Leu	Ile	Pro	Asn	Leu	Arg	Asn	
		415					420					425				
gtg	gtc	gct	ctg	gac	acg	gag	gtg	gcc	agc	aat	aga	atc	tac	tgg	tct	1345
Val	Val	Ala	Leu	Asp	Thr	Glu	Val	Ala	Ser	Asn	Arg	Ile	Tyr	Trp	Ser	
	430					435					440					
gac	ctg	tcc	cag	aga	atg	atc	tgc	agc	acc	cag	ctt	gac	aga	gcc	cac	1393
Asp	Leu	Ser	Gln	Arg	Met	Ile	Cys	Ser	Thr	Gln	Leu	Asp	Arg	Ala	His	
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ggc	gtc	tct	tcc	tat	gac	acc	gtc	atc	agc	agg	gac	atc	cag	gcc	ccc	1441
Gly	Val	Ser	Ser	Tyr	Asp	Thr	Val	Ile	Ser	Arg	Asp	Ile	Gln	Ala	Pro	
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gac	ggg	ctg	gct	gtg	gac	tgg	atc	cac	agc	aac	atc	tac	tgg	acc	gac	1489
Asp	Gly	Leu	Ala	Val	Asp	Trp	Ile	His	Ser	Asn	Ile	Tyr	Trp	Thr	Asp	
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Ser	Val	Leu	Gly	Thr	Val	Ser	Val	Ala	Asp	Thr	Lys	Gly	Val	Lys	Arg	
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Lys	Thr	Leu	Phe	Arg	Glu	Asn	Gly	Ser	Lys	Pro	Arg	Ala	Ile	Val	Val	
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Asp	Pro	Val	His	Gly	Phe	Met	Tyr	Trp	Thr	Asp	Trp	Gly	Thr	Pro	Ala	
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Lys	Ile	Lys	Lys	Gly	Gly	Leu	Asn	Gly	Val	Asp	Ile	Tyr	Ser	Leu	Val	
				545				550						555		
act	gaa	aac	att	cag	tgg	ccc	aat	ggc	atc	acc	cta	gat	ctc	ctc	agt	1729
Thr	Glu	Asn	Ile	Gln	Trp	Pro	Asn	Gly	Ile	Thr	Leu	Asp	Leu	Leu	Ser	
			560					565					570			
ggc	cgc	ctc	tac	tgg	gtt	gac	tcc	aaa	ctt	cac	tcc	atc	tca	agc	atc	1777
Gly	Arg	Leu	Tyr	Trp	Val	Asp	Ser	Lys	Leu	His	Ser	Ile	Ser	Ser	Ile	
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gat	gtc	aat	ggg	ggc	aac	cgg	aag	acc	atc	ttg	gag	gat	gaa	aag	agg	1825
Asp	Val	Asn	Gly	Gly	Asn	Arg	Lys	Thr	Ile	Leu	Glu	Asp	Glu	Lys	Arg	
	590					595					600					
ctg	gcc	cac	ccc	ttc	tcc	ttg	gcc	gtc	ttt	gag	gac	aaa	gta	ttt	tgg	1873
Leu	Ala	His	Pro	Phe	Ser	Leu	Ala	Val	Phe	Glu	Asp	Lys	Val	Phe	Trp	
605					610				615						620	
aca	gat	atc	atc	aac	gaa	gcc	att	ttc	agt	gcc	aac	cgc	ctc	aca	ggt	1921
Thr	Asp	Ile	Ile	Asn	Glu	Ala	Ile	Phe	Ser	Ala	Asn	Arg	Leu	Thr	Gly	
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640 645 650	
gtc ctc ttc cac aac ctc acc cag cca aga gga gtg aac tgg tgt gag	2017
Val Leu Phe His Asn Leu Thr Gln Pro Arg Gly Val Asn Trp Cys Glu	
655 660 665	
agg acc acc ctg agc aat ggc ggc tgc cag tat ctg tgc ctc cct gcc	2065
Arg Thr Thr Leu Ser Asn Gly Gly Cys Gln Tyr Leu Cys Leu Pro Ala	
670 675 680	
ccg cag atc aac ccc cac tcg ccc aag ttt acc tgc gcc tgc ccg gac	2113
Pro Gln Ile Asn Pro His Ser Pro Lys Phe Thr Cys Ala Cys Pro Asp	
685 690 695 700	
ggc atg ctg ctg gcc agg gac atg agg agc tgc ctc aca gag gct gag	2161
Gly Met Leu Leu Ala Arg Asp Met Arg Ser Cys Leu Thr Glu Ala Glu	
705 710 715	
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Ala Ala Val Ala Thr Gln Glu Thr Ser Thr Val Arg Leu Lys Val Val	
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Pro Asp Lys Thr Val Arg Trp Cys Ala Val Ser Glu His Glu Ala Thr	
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Lys Cys Gln Ser Phe Arg Asp His Met Lys Ser Val Ile Pro Ser Asp	
750 755 760	
ggc ccc agt gtt gct tgt gtg aag aaa gcc tcc tac ctt gat tgc atc	2353
Gly Pro Ser Val Ala Cys Val Lys Lys Ala Ser Tyr Leu Asp Cys Ile	
765 770 775 780	
agg gcc att gcg gca aac gaa gcg gat gct gtg aca ctg gat gca ggt	2401
Arg Ala Ile Ala Ala Asn Glu Ala Asp Ala Val Thr Leu Asp Ala Gly	
785 790 795	
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Leu Val Tyr Asp Ala Tyr Leu Ala Pro Asn Asn Leu Lys Pro Val Val	
800 805 810	
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Ala Glu Phe Tyr Gly Ser Lys Glu Asp Pro Gln Thr Phe Tyr Tyr Ala	
815 820 825	
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Val Ala Val Val Lys Lys Asp Ser Gly Phe Gln Met Asn Gln Leu Arg	
830 835 840	
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Gly Lys Lys Ser Cys His Thr Gly Leu Gly Arg Ser Ala Gly Trp Asn	
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ctt gag aaa gca gtg gcc aat ttc ttc tcg ggc agc tgt gcc cct tgt Leu Glu Lys Ala Val Ala Asn Phe Phe Ser Gly Ser Cys Ala Pro Cys 880 885 890	2689
gcg gat ggg acg gac ttc ccc cag ctg tgt caa ctg tgt cca ggg tgt Ala Asp Gly Thr Asp Phe Pro Gln Leu Cys Gln Leu Cys Pro Gly Cys 895 900 905	2737
ggc tgc tcc acc ctt aac caa tac ttc ggc tac tcg gga gcc ttc aag Gly Cys Ser Thr Leu Asn Gln Tyr Phe Gly Tyr Ser Gly Ala Phe Lys 910 915 920	2785
tgt ctg aag gat ggt gct ggg gat gtg gcc ttt gtc aag cac tcg act Cys Leu Lys Asp Gly Ala Gly Asp Val Ala Phe Val Lys His Ser Thr 925 930 935 940	2833
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ctt tgc cta gac aac acc cgg aag ccg gta gat gaa tac aag gac tgc Leu Cys Leu Asp Asn Thr Arg Lys Pro Val Asp Glu Tyr Lys Asp Cys 960 965 970	2929
cac ttg gcc cag gtc cct tct cat acc gtc gtg gcc cga agt atg ggc His Leu Ala Gln Val Pro Ser His Thr Val Val Ala Arg Ser Met Gly 975 980 985	2977
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ggg aag gac ctg ctg ttt aag gac tct gcc cac ggg ttt tta aaa gtc Gly Lys Asp Leu Leu Phe Lys Asp Ser Ala His Gly Phe Leu Lys Val 1025 1030 1035	3121
ccc cca agg atg gat gcc aag atg tac ctg ggc tat gag tat gtc act Pro Pro Arg Met Asp Ala Lys Met Tyr Leu Gly Tyr Glu Tyr Val Thr 1040 1045 1050	3169
gcc atc cgg aat cta cgg gaa ggc aca tgc cca gaa gcc cca aca gat Ala Ile Arg Asn Leu Arg Glu Gly Thr Cys Pro Glu Ala Pro Thr Asp 1055 1060 1065	3217
gaa tgc aag cct gtg aag tgg tgt gcg ctg agc cac cac gag agg ctc Glu Cys Lys Pro Val Lys Trp Cys Ala Leu Ser His His Glu Arg Leu 1070 1075 1080	3265
aag tgt gat gag tgg agt gtt aac agt gta ggg aaa ata gag tgt gta	3313

Lys Cys Asp Glu Trp	Ser Val Asn Ser Val Gly Lys Ile Glu Cys Val	
1085	1090	1095 1100
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Ala Asp Ala Met Ser Leu Asp Gly Gly Phe Val Tyr Ile Ala Gly Lys		
	1120 1125 1130	
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Cys Gly Leu Val Pro Val Leu Ala Glu Asn Tyr Asn Lys Ser Asp Asn		
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Cys Glu Asp Thr Pro Glu Ala Gly Tyr Phe Ala Val Ala Val Val Lys		
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Lys Ser Ala Ser Asp Leu Thr Trp Asp Asn Leu Lys Gly Lys Lys Ser		
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Cys His Thr Ala Val Gly Arg Thr Ala Gly Trp Asn Ile Pro Met Gly		
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Leu Leu Tyr Asn Lys Ile Asn His Cys Arg Phe Asp Glu Phe Phe Ser		
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Cys Met Gly Ser Gly Leu Asn Leu Cys Glu Pro Asn Asn Lys Glu Gly		
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Tyr Tyr Gly Tyr Thr Gly Ala Phe Arg Cys Leu Val Glu Lys Gly Asp		
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Val Ala Phe Val Lys His Gln Thr Val Pro Gln Asn Thr Gly Gly Lys		
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Asn Pro Asp Pro Trp Ala Lys Asn Leu Asn Glu Lys Asp Tyr Glu Leu		
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ctg tgc ctt gat ggt acc agg aaa cct gtg gag gag tat gcg aac tgc		3937
Leu Cys Leu Asp Gly Thr Arg Lys Pro Val Glu Glu Tyr Ala Asn Cys		
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His Leu Ala Arg Ala Pro Asn His Ala Val Val Thr Arg Lys Asp Lys		

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Glu Ala Cys Val His Lys Ile Leu Arg Gln Gln Gln His Leu Phe Gly			
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Ser Asn Val Thr Asp Cys Ser Gly Asn Phe Cys Leu Phe Arg Ser Glu			
	1345	1350	1355
acc aag gac ctt ctg ttc aga gat gac aca gta tgt ttg gcc aaa ctt			4129
Thr Lys Asp Leu Leu Phe Arg Asp Asp Thr Val Cys Leu Ala Lys Leu			
	1360	1365	1370
cat gac aga aac aca tat gaa aaa tac tta gga gaa gaa tat gtc aag			4177
His Asp Arg Asn Thr Tyr Glu Lys Tyr Leu Gly Glu Glu Tyr Val Lys			
	1375	1380	1385
gct gtt ggt aac ctg aga aaa tgc tcc acc tca tca ctc ctg gaa gcc			4225
Ala Val Gly Asn Leu Arg Lys Cys Ser Thr Ser Ser Leu Leu Glu Ala			
	1390	1395	1400
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Cys Thr Phe Arg Arg Pro			
1405	1410		
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Gln Cys Gln Asp Gly Lys Cys Ile Ser Tyr Lys Trp Val Cys Asp Gly			
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Ser Ala Glu Cys Gln Asp Gly Ser Asp Glu Ser Gln Glu Thr Cys Leu			
	50	55	60
Ser Val Thr Cys Lys Ser Gly Asp Phe Ser Cys Gly Gly Arg Val Asn			
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Arg Cys Ile Pro Gln Phe Trp Arg Cys Asp Gly Gln Val Asp Cys Asp			
	85	90	95
Asn Gly Ser Asp Glu Gln Gly Cys Pro Pro Lys Thr Cys Ser Gln Asp			
	100	105	110
Glu Phe Arg Cys His Asp Gly Lys Cys Ile Ser Arg Gln Phe Val Cys			
	115	120	125
Asp Ser Asp Arg Asp Cys Leu Asp Gly Ser Asp Glu Ala Ser Cys Pro			
	130	135	140

Val	Leu	Thr	Cys	Gly	Pro	Ala	Ser	Phe	Gln	Cys	Asn	Ser	Ser	Thr	Cys	145	150	155	160
Ile	Pro	Gln	Leu	Trp	Ala	Cys	Asp	Asn	Asp	Pro	Asp	Cys	Glu	Asp	Gly	165	170		175
Ser	Asp	Glu	Trp	Pro	Gln	Arg	Cys	Arg	Gly	Leu	Tyr	Val	Phe	Gln	Gly	180	185	190	
Asp	Ser	Ser	Pro	Cys	Ser	Ala	Phe	Glu	Phe	His	Cys	Leu	Ser	Gly	Glu	195	200	205	
Cys	Ile	His	Ser	Ser	Trp	Arg	Cys	Asp	Gly	Gly	Pro	Asp	Cys	Lys	Asp	210	215	220	
Lys	Ser	Asp	Glu	Glu	Asn	Cys	Ala	Val	Ala	Thr	Cys	Arg	Pro	Asp	Glu	225	230	235	240
Phe	Gln	Cys	Ser	Asp	Gly	Asn	Cys	Ile	His	Gly	Ser	Arg	Gln	Cys	Asp	245	250		255
Arg	Glu	Tyr	Asp	Cys	Lys	Asp	Met	Ser	Asp	Glu	Val	Gly	Cys	Val	Asn	260	265	270	
Val	Thr	Leu	Cys	Glu	Gly	Pro	Asn	Lys	Phe	Lys	Cys	His	Ser	Gly	Glu	275	280	285	
Cys	Ile	Thr	Leu	Asp	Lys	Val	Cys	Asn	Met	Ala	Arg	Asp	Cys	Arg	Asp	290	295	300	
Trp	Ser	Asp	Glu	Pro	Ile	Lys	Glu	Cys	Gly	Thr	Asn	Glu	Cys	Leu	Asp	305	310	315	320
Asn	Asn	Gly	Gly	Cys	Ser	His	Val	Cys	Asn	Asp	Leu	Lys	Ile	Gly	Tyr	325	330		335
Glu	Cys	Leu	Cys	Pro	Asp	Gly	Phe	Gln	Leu	Val	Ala	Gln	Arg	Arg	Cys	340	345	350	
Glu	Asp	Ile	Asp	Glu	Cys	Gln	Asp	Pro	Asp	Thr	Cys	Ser	Gln	Leu	Cys	355	360	365	
Val	Asn	Leu	Glu	Gly	Gly	Tyr	Lys	Cys	Gln	Cys	Glu	Glu	Gly	Phe	Gln	370	375	380	
Leu	Asp	Pro	His	Thr	Lys	Ala	Cys	Lys	Ala	Val	Gly	Ser	Ile	Ala	Tyr	385	390	395	400
Leu	Phe	Phe	Thr	Asn	Arg	His	Glu	Val	Arg	Lys	Met	Thr	Leu	Asp	Arg	405	410		415
Ser	Glu	Tyr	Thr	Ser	Leu	Ile	Pro	Asn	Leu	Arg	Asn	Val	Val	Ala	Leu	420	425	430	
Asp	Thr	Glu	Val	Ala	Ser	Asn	Arg	Ile	Tyr	Trp	Ser	Asp	Leu	Ser	Gln	435	440	445	
Arg	Met	Ile	Cys	Ser	Thr	Gln	Leu	Asp	Arg	Ala	His	Gly	Val	Ser	Ser	450	455	460	
Tyr	Asp	Thr	Val	Ile	Ser	Arg	Asp	Ile	Gln	Ala	Pro	Asp	Gly	Leu	Ala	465	470	475	480
Val	Asp	Trp	Ile	His	Ser	Asn	Ile	Tyr	Trp	Thr	Asp	Ser	Val	Leu	Gly	485	490		495
Thr	Val	Ser	Val	Ala	Asp	Thr	Lys	Gly	Val	Lys	Arg	Lys	Thr	Leu	Phe	500	505	510	
Arg	Glu	Asn	Gly	Ser	Lys	Pro	Arg	Ala	Ile	Val	Val	Asp	Pro	Val	His	515	520	525	
Gly	Phe	Met	Tyr	Trp	Thr	Asp	Trp	Gly	Thr	Pro	Ala	Lys	Ile	Lys	Lys	530	535	540	
Gly	Gly	Leu	Asn	Gly	Val	Asp	Ile	Tyr	Ser	Leu	Val	Thr	Glu	Asn	Ile	545	550	555	560
Gln	Trp	Pro	Asn	Gly	Ile	Thr	Leu	Asp	Leu	Leu	Ser	Gly	Arg	Leu	Tyr	565	570		575
Trp	Val	Asp	Ser	Lys	Leu	His	Ser	Ile	Ser	Ser	Ile	Asp	Val	Asn	Gly	580	585	590	
Gly	Asn	Arg	Lys	Thr	Ile	Leu	Glu	Asp	Glu	Lys	Arg	Leu	Ala	His	Pro				



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Leu	Leu	Ala	Glu	Asn	Leu	Leu	Ser	Pro	Glu	Asp	Met	Val	Leu	Phe	His
				645					650					655	
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			660					665					670		
Ser	Asn	Gly	Gly	Cys	Gln	Tyr	Leu	Cys	Leu	Pro	Ala	Pro	Gln	Ile	Asn
		675					680					685			
Pro	His	Ser	Pro	Lys	Phe	Thr	Cys	Ala	Cys	Pro	Asp	Gly	Met	Leu	Leu
	690					695					700				
Ala	Arg	Asp	Met	Arg	Ser	Cys	Leu	Thr	Glu	Ala	Glu	Ala	Ala	Val	Ala
705					710					715					720
Thr	Gln	Glu	Thr	Ser	Thr	Val	Arg	Leu	Lys	Val	Val	Pro	Asp	Lys	Thr
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			740					745					750		
Phe	Arg	Asp	His	Met	Lys	Ser	Val	Ile	Pro	Ser	Asp	Gly	Pro	Ser	Val
	755					760					765				
Ala	Cys	Val	Lys	Lys	Ala	Ser	Tyr	Leu	Asp	Cys	Ile	Arg	Ala	Ile	Ala
	770					775					780				
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785					790					795					800
Ala	Tyr	Leu	Ala	Pro	Asn	Asn	Leu	Lys	Pro	Val	Val	Ala	Glu	Phe	Tyr
				805					810					815	
Gly	Ser	Lys	Glu	Asp	Pro	Gln	Thr	Phe	Tyr	Tyr	Ala	Val	Ala	Val	Val
			820					825					830		
Lys	Lys	Asp	Ser	Gly	Phe	Gln	Met	Asn	Gln	Leu	Arg	Gly	Lys	Lys	Ser
		835					840					845			
Cys	His	Thr	Gly	Leu	Gly	Arg	Ser	Ala	Gly	Trp	Asn	Ile	Pro	Ile	Gly
	850					855					860				
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865					870					875					880
Val	Ala	Asn	Phe	Phe	Ser	Gly	Ser	Cys	Ala	Pro	Cys	Ala	Asp	Gly	Thr
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Asp	Phe	Pro	Gln	Leu	Cys	Gln	Leu	Cys	Pro	Gly	Cys	Gly	Cys	Ser	Thr
		900						905					910		
Leu	Asn	Gln	Tyr	Phe	Gly	Tyr	Ser	Gly	Ala	Phe	Lys	Cys	Leu	Lys	Asp
	915					920						925			
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	930					935					940				
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945					950					955					960
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			980					985					990		
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	995					1000						1005			
Lys	Ser	Lys	Glu	Phe	Gln	Leu	Phe	Ser	Ser	Pro	His	Gly	Lys	Asp	Leu
	1010					1015					1020				
Leu	Phe	Lys	Asp	Ser	Ala	His	Gly	Phe	Leu	Lys	Val	Pro	Pro	Arg	Met
1025					1030					1035					1040
Asp	Ala	Lys	Met	Tyr	Leu	Gly	Tyr	Glu	Tyr	Val	Thr	Ala	Ile	Arg	Asn
				1045					1050					1055	

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 Val Lys Trp Cys Ala Leu Ser His His Glu Arg Leu Lys Cys Asp Glu  
 1075 1080 1085  
 Trp Ser Val Asn Ser Val Gly Lys Ile Glu Cys Val Ser Ala Glu Thr  
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 Lys His Gln Thr Val Pro Gln Asn Thr Gly Gly Lys Asn Pro Asp Pro  
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 Trp Ala Lys Asn Leu Asn Glu Lys Asp Tyr Glu Leu Leu Cys Leu Asp  
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 Gly Thr Arg Lys Pro Val Glu Glu Tyr Ala Asn Cys His Leu Ala Arg  
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 Ala Pro Asn His Ala Val Val Thr Arg Lys Asp Lys Glu Ala Cys Val  
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 His Lys Ile Leu Arg Gln Gln Gln His Leu Phe Gly Ser Asn Val Thr  
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 Thr Tyr Glu Lys Tyr Leu Gly Glu Glu Tyr Val Lys Ala Val Gly Asn  
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 Arg Pro  
 1410

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B  
concl